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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/784,593      | 02/23/2004  | Charles Black        | YOR920010225US3     | 8295             |

7590 12/15/2004  
PAUL D. GREELEY, ESQ.  
OHLANDT, GREELEY, RUGGIERO & PERLE, L.L.P.  
ONE LANDMARK SQUARE, 10th FLOOR  
STAMFORD, CT 06901-2682

EXAMINER

BERRY, RENEE R

ART UNIT PAPER NUMBER

2818

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|  |                               |                              |  |
|--|-------------------------------|------------------------------|--|
| <p align="center"><b>Office Action Summary</b></p> | Application No.<br>10/784,593 | Applicant(s)<br>BLACK ET AL. |  |
|  | Examiner<br>Renee R Berry     | Art Unit<br>2818             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 July 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 42-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 42-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/23/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 42-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,440,213 to Alivisatos et al. in view of US Patent No. 6,603,139 to Tressler et al.

In regards to claim 42, Alivisatos teaches depositing a plurality of nano-particles on said substrate in such a way that said nano-particles form a monolayer on said substrate; wherein said nano-particles are coated with an organic surfactant, and wherein said nano-particles are electrically insulating with relative dielectric constant greater than 10; and optionally heating said monolayer of nano-particles to thereby form said thin film at column 1, lines 20-31.

In regards 43, Alivisatos teaches the field effect transistor of claim 42, wherein said semiconductor material is comprised of an organic material or a hybrid organic/inorganic material at column .

In regards 44, Alivisatos teaches the field effect transistor of claim 42, wherein said nano-particles are formed via a non-aqueous chemical process that injects metal oxide precursors at temperatures in a range between about 600 C to about

300<sup>0</sup> C at column 3, lines 39-52.

In regards 45, Alivisatos teaches the field effect transistor of claim 42, wherein said nano-particles are formed in a predetermined crystalline phase by either synthesizing or heating at column 4, lines 38-43.

However, Alivisatos does not teach all the limitations of the claims.

In regards to claim 1, Tressler teaches a field effect transistor comprising: a source region and a drain region; a channel region comprising a semiconductor material; an insulating layer of electrically insulating material disposed over said channel region, and a gate electrode overlying said layer of electrically insulating material at column 11, lines 22-28

In regards 46, Tressler teaches the field effect transistor of claim 42, wherein said method further depositing and heating steps, thereby increasing the thickness of said thin film at column 8, lines 28-38.

Therefore it would have been obvious to one having ordinary skill in the art to have modified Alivisatos to include a field effect transistor comprising: a source region and a drain region; a channel region comprising a semiconductor material; an insulating layer of electrically insulating material disposed over said channel region, and a gate electrode overlying said layer of electrically insulating material, and depositing and heating steps, thereby increasing the thickness of said thin film, since nanoparticles/nanocrystals are an art recognized substitute for polymer material, as described in column 11, lines 29-36 of Tressler et al.

**Conclusion**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renee R Berry whose telephone number is (571) 272-1774. The examiner can normally be reached on M-F 9-5:30.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
RRB

October 7, 2004

  
MICHAEL TRAN  
PRIMARY EXAMINER